REMARKS

Favorable reconsideration of this application in view of the above amendments and the following remarks is respectfully requested. By this amendment, claims 1, 16, 24-27, 30, 31, 37, 41, and 44 have been amended to more clearly recite the subject matter of the instant application. Claim 2 has been canceled without prejudice or disclaimer. Applicant submits that no new matter has been added and formal notice of such is solicited. Currently claims 1 and 3-46 are pending of which claims 1, 24, 41, and 44 are independent.

The Examiner has objected to the drawings under 37 CFR 1.83(a) as alleged failing to show every feature of the invention specified in the claims in the drawings. Applicant submits that every feature of the invention specified in the claims is shown in the drawings, as required. Each of the Examiner's comments is addressed in turn. The generating the incoherent beam of light is shown, for example, in FIG. 5, element 506 or FIG. 6, element 602. This aspect is further described, for example, at page 6, lines 13-19, page 9, lines 15-18, and page 14, lines 12-14, of the specification. The amplifying the incoherent beam of light with an EDFA is shown, for example, in FIG. 5, element 512 or FIG. 6, element 606. This aspect is further described, for example, page 10, lines 16-20, and page 14, lines 23-24, of the specification. The collimating the beam with a gradient index lens is shown, for example, in FIG. 5, element 514 or FIG. 6, element 608. This aspect is further described, for example, at page 11, lines 5-16, and page 15, lines 4-12, of the specification. The directing the optical beam using active and static pointing techniques is shown, for example, in FIG. 5, element 516 or FIG. 6, element 610. This aspect is further described, for example, at page 11, line 17-22 and page 15, lines 13-21, of the specification. The using an interferometer to toggle the light beam is shown, for example, in FIG. 5, element 510 or FIG. 6, element 604. This aspect is further described, for example, at page 9, lines 22-25, and page 14, lines 18-22, of the specification. Therefore, Applicant respectfully submits that every feature of the invention specified in the claims is shown in the drawings. Accordingly, withdrawal of this objection is respectfully requested.

Claims 1, 12-17, 19-24, 33-38, and 40-43 were rejected under 35 USC 102(b) as anticipated by Doucet et al., U.S. Patent 5,786,923 (hereinafter, Doucet '923). Claims 2-10 and 25-31 were rejected under 35 USC 103(a) as obvious in view of Doucet '923. Claims 11 and 32 were rejected under 35 USC 103(a) as obvious in view of Doucet '923 in view of Meadows, U.S. Patent No. 5,381,250. Claims 18 and 39 were rejected under 35 USC 103(a) as obvious in view of Doucet '923 in view of Yonenaga, U.S. Patent No. 5,543,952. Claims 44-46 were rejected under 35 USC 103(a) as obvious in view of Doucet '923 in view of Huggins, U.S. Patent No. 4,799,797. These rejections are respectfully traversed.

In a general aspect, a method for reducing atmospheric scintillation in a beam of light transmitted across a free space includes (a) generating a substantially *single mode* phase incoherent beam of light with *a light emitting diode*; (b) collimating the phase incoherent beam of light; and (c) propagating the phase incoherent collimated beam of light across the free space for *long range communications transmission.* In another general aspect, an apparatus for transmitting a beam of light across a free space in a manner that reduces atmospheric scintillation in the transmitted beam of light includes a light emitting diode to generate a substantially single mode phase incoherent beam of light, a collimating optics to collimate the beam of light, and a propagating optics to propagate the phase incoherent collimated beam of light across the free space. In yet another general aspect, an apparatus for receiving a collimated single mode phase incoherent beam of light from a free space includes a receiving lens to receive the collimated phase incoherent beam from free space and a light detector to detect at least one of light and darkness within the received phase incoherent beam of light, thereby producing a received data stream. In another general aspect, a transmitter for use in an optical light beam data link capable of transmitting a beam of light across a free space in a manner that reduces atmospheric scintillation in the transmitted beam of light includes a light emitting diode to generate a substantially single mode phase incoherent beam of light, an external modulator to encode data upon the phase incoherent beam of light, and a collimating optics to collimate the incoherent

beam of light. The light emitting diode is a fiber-optic coupled superluminescent light emitting diode.

Doucet '923 relates to a point-to-multipoint bi-directional wide area telecommunications network using atmospheric optical communication that includes a primary transceiver unit, a plurality of subscriber transceiver units, and an optical router. Doucet '923 further relates to multi-mode transmissions. Since Doucet '923 relates to multi-mode transmissions, Doucet '923 fails to describe or suggest using a light emitting diode (LED) as a light source for long range communications transmission. LEDs are known for use in short path transmission because of the problems related to speckle, scintillation, dispersion, and the like.

Therefore, Doucet '923 fails to describe or suggest the subject matter of independent claims 1, 24, and 41, and claims 3-17, 19-23, 25-31, 33-38, 40, 42, and 43, which depend therefrom. In particular, Doucet '923 lacks a light emitting diode generating a substantially single mode phase incoherent beam of light, as recited in independent claims 1 and 24, and that the received transmission is a single mode incoherent beam of light, as recited in independent claim 41.

As to claims 11 and 32, Meadows '250 fails to overcome the deficiencies of Doucet '923. Meadows '250 relates to a family of optical switches that employ dielectric film polarizing beam splitters and switchable electro-optic retarder to produce 2X2 optical switches that exhibit low crosstalk characteristics while switching unpolarized or linearly polarized collimated light. Meadows '250 also lacks any teaching or suggestion of a light emitting diode generating a substantially single mode phase incoherent beam of light, as recited in independent claims 1 and 24. Therefore, Doucet '923, alone or in combination with Meadows '250, fails to describe or suggest the subject matter of claims 11 and 32, which depend from independent claims 1 and 24, respectively.

As to claims 18 and 39, Yonenaga '952 fails to overcome the deficiencies of Doucet '923. Yonenaga'952 relates to an input binary signal, in a transmitter side in an optical transmission system, converted to a duobinary signal that is applied to an optical modulation

device, which provides an optical intensity modulation signal. Like Meadows '250, Yonenaga '952 also lacks any teaching or suggestion of a light emitting diode generating a substantially single mode phase incoherent beam of light, as recited in independent claims 1 and 24. Therefore, Doucet '923, alone or in combination with Yonenaga '952, fails to describe or suggest the subject matter of claims 18 and 39, which depend from independent claims 1 and 24, respectively.

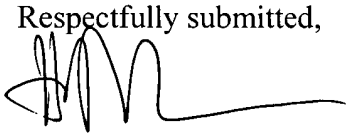
As to claims 44-46, Huggins '797 fails overcome the deficiencies of Doucet '923. Huggins '797 relates to a multiplexed optical sensor system including a short coherence length source, a plurality of waveguide sensors, a corresponding plurality of waveguide detectors, and a common optical bus. Huggins '797 further relates to multi-mode transmissions. In fact, Huggins '797 teaches away from using an LED as a light source, as Huggins '797 describes using LEDs for short distance transmissions, whereas the instant subject matter relates to long range communication transmissions. In fact, for example, Huggins '797 discusses LEDs and SLDs having coherence lengths on the order of microns and the advantages of a light source with a short coherence. (Huggins '797, column 2, lines 49-64). Therefore, Doucet '923 even in combination with Huggins '797 fails to describe or suggest the subject matter of claims 44-46.

Therefore, none of the claims is described or suggested by Doucet '923, alone or in combination with any of Meadows '250, Yonenaga '952, or Huggins '797. Accordingly, withdrawal of these rejections is respectfully requested.

Applicant submits that all pending claims, claims 1 and 3-46, are in condition for allowance, and formal notice of such is solicited. If the Examiner has any questions, the Examiner is respectfully requested to contact the undersigned at the number listed below.

It is believed that no fees are required at this time. However, Applicant hereby petitions for any extension of time that may be necessary to maintain the pendency of this application. The Commissioner is hereby authorized to charge payment of any additional fees required for the above-identified application or credit any overpayment to Deposit Account No. 05-0460.

Respectfully submitted,



Heather Morin
Registration No. 37,336

EDELL, SHAPIRO & FINNAN, LLC
1901 Research Boulevard, Suite 400
Rockville, Maryland 20850-3164
(301) 424-3640
Hand Delivered on: _____